

Olethreutinae (Lepidoptera, Tortricidae) from Mt. Changbai–shan in China, part I

Yang–Seop BAE, Kyu–Tek PARK¹⁾, and Dae–Yong KIM²⁾

Department of Biology, College of Natural Sciences, University of Incheon, Incheon, 402–749 Korea

¹⁾Center for Insect Systematics, Kangwon National University, Chuncheon, 200–701 Korea

²⁾Horticulture and Forest Department, Yanbian University, Jilin, 133400 China

E–mail: baes@lion.incheon.ac.kr

Abstract During the expedition of Mt. Chanbai–shan, China in 2000, a total of 71 species of Olethreutinae was recognized. Of these, 15 species were reported for the first time from China. *Phiaris semicremata* (Christoph, 1881) was newly combined. The host plants, synonymies, and photographs of newly reported species are provided.

Key words Lepidoptera, Tortricidae, Olethreutinae, Mt. Changbai, China

INTRODUCTION

Mt. Chanbai–shan (= Mt. Paektu–san in Korean) is the most highest summit (2,744 m) on the border between North Korea and NE China (41° 1'–42° 1'E; 127° 3'–128° 6'N). The vegetation of the mountain is unique on the east coast: The areas below 1,100 m have mixed coniferous and with broad leaved forest with *Pinus koraiensis*, *Fraxinus mandshurica*, *Phellodendron amurense*, *Larix olgensis*, *Picea asperata*, and *Panax ginseng*. On the steeper slope of the mountain it is composed of the coniferous forest and above this, from 1,800 to 2,000 m, Erman's–birch *Betula ermanii* elfin woodlands are dominated. Above the tree line at 2,000 m there is a subalpine evergreen ericaceous shrub including *Vaccinium uliginosum* and *Lycopodium alpinum*. The highest part is covered with alpine tundra. The vegetation of the mountain is a mixture of plants from Europe and Siberia like *Linnaea borealis* and *Alnus hirsute* together with those more commonly found in central China, such as *Actinidia kolomikta*, *A. arguta* and *Shizandra chinensis*. Over 1,800 species of vascular plants have been recorded. The fauna of the reserve and the surrounding area of the Changbai subregion of the ancient boreal region belongs shows the obvious vertical zonality. But Changbai fauna of Tortricid moths is little known.

This article is the 1st report on the expedition for the Microlepidoptera from Mt. Changbai–shan. The subfamily Olethreutinae (Lepidoptera, Tortricidae) collected at six sites in different localities. All materials examined are based on the collections from the vicinities of Mt. Changbai–shan, which was scheduled by

a collaborative survey program between the Yanbian University in China and the Center for Insect Systematics in Korea, under the financial support by Korea Research Institute of Bioscience and Biotechnology (KRIBB) in the year 2000. For this program, our investigation team consisted of five specialists including two lepidopterists and a coleopterist, and surveyed from just below the border of the deciduous forest, ca. 1750–1800 m, near Eolttaobaieo (= Idobekwha), Chongshan, and near Longjing (= Yongjung), during eight days. Olethreutids were mostly collected by the light traps, and few of them were collected in daytime.

A total of 71 species of Olethreutinae was recognized from this expedition. Of these, 15 species were reported for the first time from China, and 24 species were unknown from the Korean peninsula. The short remarks, synonym, distributional ranges, and known host plants of the newly reported species in China and the unknown species in the Korean peninsula are provided. All the material examined for this study will be preserved in the Center for Insect Systematics (CIS) in Korea, Horticulture and Forest Department, Yanbian University in China, and Department of Biology, University of Incheon (UIB). For the main systematic informations of the species of subfamily Olethreutinae, referred to Bradley *et al.* (1979), Kawabe (1982), Byun *et al.* (1998), Kuznetsov (1978), Liu and Bai (1977), Razowski (1983, 1987, 1991), and Komai (1999).

Collecting dates and sites for the light trap in Mt. Changbai-shan, and its vicinities are as follows:

Site 1: 27. VII. 2000; near Heping Lin Chang, alt. 850 m (42° 19' 04"E, 128° 07' 37"N); about 20 km far away from Eolttaobaieo (= Idobekwha) towards Changbai Waterfall; collected by Y.S. Bae and J.S. Lee.

Site 2: 28. VII. 2000; upper limit of a Broad-leaf Belt including *Betula* spp., alt. 1,750 m (42° 03' 36"E, 128° 03' 23"N), about 500m far from Hotel (Doogyunsanjang); collected by Y.S. Bae and K.T. Park.

Site 3: 29. VII. 2000; at entrance of Dixiashenlin, alt. 1,700 m (42° 04' 28"E, 128° 03' 55"N); collected by Y.S. Bae and K.T. Park.

Site 4: 30. VII. 2000; Electric Power plant, alt. 760 m (42° 22' 34"E, 128° 05' 55"N), 10 km from Idobekwha towards Changbai Water Fall; collected by Y.S. Bae and J.S. Lee.

Site 5: 31. VII. 2000; Chongshan, alt. 600 m (42° 05' 33"E, 128° 59' 33"N); the light trap screen was placed just beside the Doumen (= Duman) Riverside, almost border to North Korea. The collected materials were almost from the North Korean side; collected by Y.S. Bae, K.T. Park and J.S. Lee.

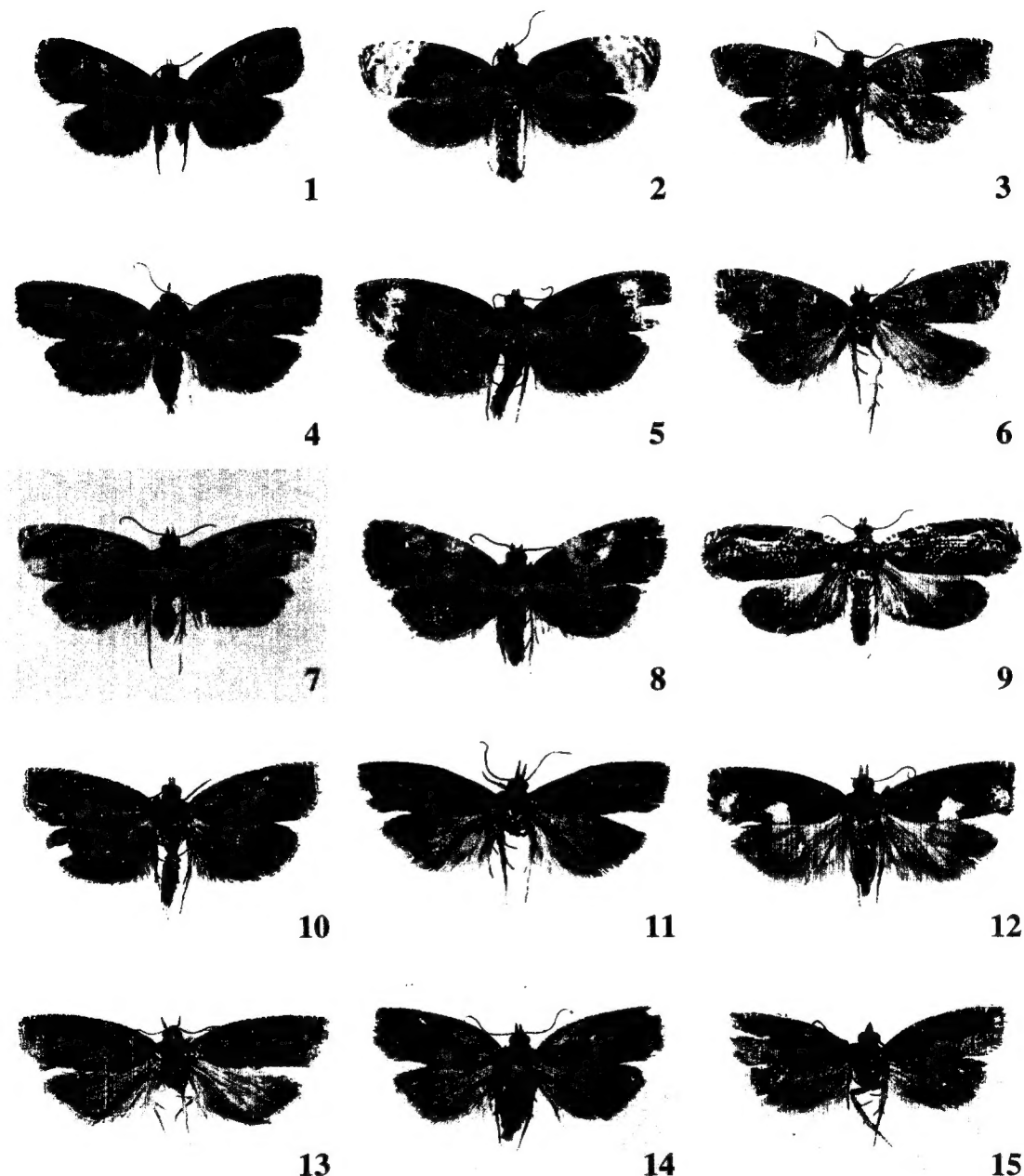
Site 6: 1–2. VIII. 2000; Jiashan, alt. 600 m (42° 38' 40"E, 128° 54' 28"N), 50 km NE and takes 70 minutes from Longjing (= Yongjung) by car; collected by Y.S. Bae and J.S. Lee.

SYSTEMATIC ACCOUNTS

Subfamily Olethreutinae

Tribe Gatesclarkeanini

The tribe Gatesclarkeanini contains about 65 species in five genera, *i.e.*, *Ukamenia*, *Hiroshiinoueana*, *Gatesclarkeana*, *Asymmetracha*, and *Endothenia*. It is distributed in the southeast Asia, South Pacific,



Figs 1-15. Adults: 1, *Ukamenia sapporensis* (Matsumura, 1931); 2, *Apotomis betuletana* (Haworth, 1811); 3, *Celypha cornigera* Oku, 1968; 4, *Eudemis profundana* ([Denis & Schiffermüller], 1775); 5, *Hedya semiassana* (Kennel, 1901); 6, *Olethreutes rivulana* (Scopoli, 1763); 7, *Phiaris pryerana* (Walsingham, 1900); 8, *Phiaris semicremata* (Christoph, 1881), comb. nov.; 9, *Pseudohedya cincta* Falkovitsh, 1962; 10, *Pseudohedya gardana* (Christoph, 1881); 11, *Epinotia maculana* (Fabricius, 1775); 12, *Epinotia pentagonana* (Kennel, 1901); 13, *Epinotia signatana* (Douglas, 1845); 14, *Epinotia ulmi* Kuznetsov, 1966; 15, *Zeiraphera bicolora* Kawabe, 1976.

and the Holarctic region.

***Endothenia banausopis* (Meyrick, 1938)**

Material examined. 1ex, site 6.

***Endothenia gentianeana* (Hübner, 1799)**

Tortirx gentianeana Hübner, 1799, Samml. eur. Schmett. 7: pl. 3, fig. 12.

Tortrix oblongana Haworth, 1811, Lepid. Br.: 433.

Tortrix sellana Frölich, 1828, Enumeratio Tortr. Würtemb.: 96.

Grapholitha desertana Staudinger, 1880, Horae Soc. ent. Ross. (1879) 15: 256.

Penthina oblongana var. *adelana* Rebel, 1892, Verh. Zool. Ges. Wien.: 526.

Wingspan. 19.5 mm.

Material examined. 1ex, site 6.

Distribution. China, Korea, Japan, Mongolia, Russia (Siberia, Transbaikalia, Primorye), Asia Minor, Arabian Peninsula.

Host plants. *Dipsacus silvester* (Dipsacaceae), *Plantago* (Plantaginaceae), *Gentiana* (Gentianaceae) in Europe (Hannemann, 1961).

***Endothenia hebesana* (Walker, 1863)**

Tortrix hebesana Walker, 1863, List. Spec. Lep. Insects Coll. Br. Mus. 28: 342.

Carpocapsa inexpertana Walker, 1863, *ibid.*: 342.

Endothenia adustana Krogerus, 1947, Notulae Ent. 27: 4–7, fig. 1.

Endothenia kiyosatoensis Kawabe, 1980, Tinea 11: 20, figs 3, 19.

Wingspan. 16 mm.

Material examined. 1ex, site 6.

Distribution. China, Japan, Russia, Europe, America.

Host plants. *Verbena* (Verbenaceae), *Antirrhinum*, *Iris*, *Verbascum* (Iridaceae), *Delphinium* (Ranunculaceae), *Gentiana* (Gentianaceae) in America (Kuznetsov, 1973).

***Ukamenia sapporensis* (Matsumura, 1931) (Fig. 1)**

Simaethis sapporensis Matsumura, 1931, 6000 Ill. Ins. Jap.: 1080.

Aphiaris mirana Kuznetsov, 1981, Trudy zool. Inst. Leningr. 92: 78, figs 4–8.

Wingspan. 13 mm. This species can be distinguished from allies by the rosy-red markings of the forewing and the presence of a pair of small androcornial pockets in the anterior portion of 3rd sternite. A monotypic genus.

Material examined. 1ex, site 6.

Distribution. China (new record), Korea, Japan, Russia (Primorye, Sakhalin).

Host plants. *Castanea crenata* S. et Z. *Quercus mongolica* var. *grosserrata* (Fagaceae), *Hamamelis japonica* (Hamamelidaceae), *Vaccinium oldhami* (Ericaceae), and galls made by *Dryocosmus kuriphilus* Yasumatsu in Japan (Oku, 1981).

Tribe Olethreutini

The tribe Olethreutini, with about 1,400 species in over 144 genera, occurs throughout the world, with the greatest diversity in East and Southeast Asia and the Holarctic region (Horak and Brown, 1991).

***Apotomis betuletana* (Haworth, 1811) (Fig. 2)**

Tortrix betuletana Haworth, 1811, *Lepid. Br.*: 432.

Penthina leucomelana Guenée, 1845, *Annls Soc. ent. Fr.* (2)3: 152.

Wingspan. 18–20 mm. This species is one of the commonest species in NE China. See Razowski (1983) for the genitalia.

Material examined. 3exs, site 1; 2exs, site 3; 1ex, site 6.

Distribution. China (new record), Korea, Japan, Russia (Siberia, Transbaikalia, Primorye), Europe.

Host plants. *Betula* sp. (Betulaceae) in Korea (Jaros *et al.*, 1992); *Betula manshurica*, *B. paraermanii*, *B. platyphylla*, and *B. taushi* (Betulaceae) in Russia (Kuznetsov, 1973).

***Apotomis cuphostra* (Butler)**

Penthina cuphostra Butler, 1879, *Ill. Het. Coll. Br. Mus.* 3: 80, pl. 60, fig. 8.

Olethreutes maenamii Kawabe, 1974, *Trans. Lepid. Soc. Jap.* 25: 102, figs 6, 19, 20, 27.

Wingspan. 18–21 mm. A Korean–Japanese species, known from N Korea and Japan (Honshu, Kyushu and Yakushima), and many specimens have been collected in NE China as well.

Material examined. 7exs, site 1; 1ex, site 3; 10exs, site 4; 1ex, site 6.

Distribution. China (new record), Korea (N), Japan.

***Apotomis inundana* ([Denis et Schiffermüller], 1775)**

Material examined. 2exs, site 1; 1ex, site 2; 3exs, site 3; 4exs, site 4; 1ex, site 6.

***Apotomis* sp.**

Wingspan. 20 mm. This species is not identified yet.

Material examined. 1ex, site 1; 1ex, site 4; 1ex, site 6.

Distribution. China.

***Celypha cornigera* Oku, 1968 (Fig. 3)**

Celypha cornigera Oku, 1968, *Kontyû* 36: 225, figs 1, 2.

Wingspan. 12–13.5 mm. This species is similar to *Celypha cespitana* (Hübner) and *C. flavipalpana* (Herrich-Schäffer) in the colouration of forewing, but it is recognized by the forewing usually darker than that of allied species.

Material examined. 2exs, site 4; 1ex, site 6.

Distribution. China (new record), Korea, Japan.

***Celypha flavipalpana* (Herrich-Schäffer, 1848)**

Material examined. 2exs, site 5; 1ex, site 6; 1ex, site 6.

***Eudemis profundana* ([Denis & Schiffermüller], 1775) (Fig. 4)**

Tortrix profundana [Denis & Schiffermüller], 1775, Ank. syst. Werkes Schmett. Wien.: 132.

Tortrix sylvana Hübner, 1799, Samml. eur. Schmett. pl. 20, fig. 128.

Phalaena nebulana Donovan, 1806, Nat. Hist. Br. Ins. 11: 13, pl. 364–3.

Tortrix asseclana Haworth, 1811, Lepid. Br.: 462.

Tortrix aethiopiana Howorth, 1811, *ibid*: 462.

Tortrix wellensiana Hübner, 1813, Samml. eur. Schmett. pl. 73, fig. 237.

Tortrix alphonsiana Duponchel, 1834, Hist. nat. Lépidopt. Papillons Fr. 9: 93, pl. 239, fig. 9.

Wingspan. 16–22 mm. This species is rather similar to an European species *E. prophyra* (Hübner), but differs from the latter by the broad rounded forewing and marbled appearance.

Material examined. 2exs, site 1; 1ex, site 2; 3exs, site 3; 2exs, site 4; 2exs, site 6; 5exs, site 6.

Distribution. China (new record), Korea, Japan, Russia (Primorye), Europe.

Host plants. *Quercus serrata* Thunb. (Fagaceae), *Prunus padus* L., and *Malus sieboldii* Rhed (Rosaceae) (Kawabe, 1982); *Prunus ssiori* Fr. Schm. (Rosaceae) in Japan (Bae & Sakamaki, 1995).

***Eudemopsis purpurissatana* (Kennel, 1901)**

Material examined. 1ex, site 4.

***Hedya inornata* (Walsingham, 1900)**

Material examined. 2exs, site 1; 1ex, site 2; 1ex, site 3; 1ex, site 4.

***Hedya salicella* (Linnaeus, 1758)**

Material examined. 1ex, site 6.

***Hedya semiassana* (Kennel, 1901) (Fig. 5)**

Penthina semiassana Kennel, 1901, Dt. ent. Z. Iris 13: 246.

Wingspan. 25 mm. An eastern Palearctic species. Only one specimen collected from the power plant.

Material examined. 1ex, site 4.

Distribution. China (new record), Korea, Japan, Russia (Primorye).

Host plants. *Quercus serrata* T. (Fagaceae) in Japan and *Juglans mandschurica* M. (Juglandaceae) in Russia (Kawabe, 1982).

***Hedya vicinana* (Ragonot, 1894)**

Material examined. 1ex, site 1; 3exs, site 3.

***Lobesia (Lobesia) macroptera* Liu et Bae, 1994**

Lobesia (Lobesia) macroptera Liu et Bae, 1994, 856, figs 10, 23, 34, 38–39.

Wingspan. 14.5 mm. This species was first described in 1994 by Liu and Bae from Sichuan in China.

Material examined. 1ex, site 6.

Distribution. China.

***Kennelia xylinana* (Kennel, 1900)**

Material examined. 1ex, site 4; 1ex, site 6.

***Metendothenia atropunctana* (Zetterstedt, 1840)**

Material examined. 4exs, site 6; 3exs, site 6.

***Olethreutes captiosana* (Falkovitsh, 1960)**

Material examined. 1ex, site 1.

***Olethreutes doubledayana* (Barrett, 1872)**

Material examined. 1ex, site 1; 4exs, site 6; 1ex, site 6.

***Olethreutes lacunana* ([Denis et Schiffermüller], 1775)**

Material examined. 1ex, site 2.

***Olethreutes rivulana* (Scopoli, 1763) (Fig. 6)**

Phalaena rivulana Scopoli, 1763, Ent. Carn. 237, fig. 600.

Tortrix conchana Hübner, 1799, Samml. eur. Schmett. pl. 17, fig. 106.

Wingspan. 14.5–16 mm. This species is closely similar to *O. pryerana* in superficial appearance, but differs from it by the forewing with silvery white in the ground colour.

Material examined. 2exs, site 5.

Distribution. China (new record), Korea, Russia (Primorye), Europe.

Host plants. *Alnus* sp., *Betula* sp. (Betulaceae), *Filipendula* sp., *Rubus* sp. (Rosaceae), *Galium* sp. (Rubiaceae), *Genista* sp., *Hieracium* sp. (Asteraceae), *Lotus* sp. (Leguminosae), *Ribes* sp. (Pittosporaceae), *Scabiosa* sp. (Dipsacaceae), and *Ulmaria* sp. (Ulmaceae) in England (Bradley *et al.*, 1979).

***Olethreutes* sp.**

Wingspan. 12 mm. This species is not described in this time.

Material examined. 1ex, site 6.

Distribution. China.

***Phiaris dolosana* (Kennel, 1901)**

Material examined. 3exs, site 6; 2exs, site 6.

***Phiaris pryerana* (Walsingham, 1900) (Fig. 7)**

Exartema pryerana Walsingham, 1900, Ann. Mag. nat. Hist. (7)6: 126.

Wingspan. 14–16 mm. This species is similar to *Olethreutes rivulana* (Scopoli) in appearance, but it differs by the pale ochreous ground colour, while in *O. rivulana* (Scopoli) with silvery white forewing. The forewing colouration and markings are extremely variable, especially in the shape of pretornal patch.

Material examined. 4exs, site 1; 4exs, site 3; 3exs, site 4; 2exs, site 5; 2exs, site 6.

Distribution. China (new record), Korea, Japan.

***Phiaris semicremata* (Christoph, 1881), comb. nov. (Fig. 8)**

Penthina semicremata Christoph, 1881, Bull. Soc. imp. Nat. Moscou 56(1): 77.

Cymolomia semicremata: Kennel, 1916: 433, pl. 18, fig. 9; Caradja, 1916: 59.

Exartema semicremanum: Walsingham, 1900: 127; Matsumura, 1905: 229; Inoue, 1953: 1: 108.

Argyroploce semicremata: Razowski, 1971: 535, fig. 174.

Olethreutes semicremata: Kuznetsov, 1967: 56; 1973, 53, 125–126; Kawabe, 1982: 2: 171; 1986: 56–58, figs 1–5; Razowski, 1995: 312.

Wingspan. 14–16 mm. This species is easily distinguished from its allies by the pale yellowish forewing. This species is newly combined from the genus *Olethreutes* Hübner based on the genitalic characters.

Material examined. 2exs, site 6; 4exs, site 6.

Distribution. China (new record), Japan, Russia (Primorye).

***Phiaris transversana* (Christoph, 1881)**

Material examined. 1ex, site 3; 1ex, site 6; 7exs, site 6.

***Pseudohedya cincinna* Falkovitsh, 1962 (Fig. 9)**

Pseudohedya cincinna Falkovitsh, 1962, Trudy zool. Inst. Leningr. 30: 355, figs 3, 4.

Pseudohedya elaborata Kawabe, 1976, Tinea 10: 45, figs 8, 21, 27.

Wingspan. 21 mm. This species has been known as *Pseudohedya elaborata* Kawabe, but was synonymized by Kawabe (1984).

Material examined. 1ex, site 1; 1ex, site 5.

Distribution. China (new record), Korea, Japan, Russia (Primorye).

***Pseudohedya gardana* (Christoph, 1881) (Fig. 10)**

Grapholitha gardana Christoph, 1881, Bull. Soc. Nat. Moscou, 56 (2): 419.

Wingspan. 18 mm. This species is similar to *Pseudohedya retracta*, but can be distinguished from the latter by the distinct bend-like median fascia of forewing and paler hindwing.

Material examined. 1ex, site 6.

Distribution. China (new record), Korea, Japan, Russia (Siberia).

Host plant. *Elaeagnus* sp. (Elaeagnaceae) in Japan (Kawabe, 1982).

***Saliciphaga acharis* (Butler, 1879)**

Material examined. 1ex, site 2; 1ex, site 6; 3exs, site 6.

***Saliciphaga caecia* Falkovitsh, 1962**

Material examined. 1ex, site 3; 2exs, site 6; 1ex, site 6.

Tribe Eucosmini

The tribe Eucosmini, with about 1,000 species in over 125 genera, is distributed mostly in the Holarctic region, and over half of the known species occurs in the Nearctic region (Horak and Brown, 1991).

***Epinotia contrariana* (Christoph, 1881)**

Material examined. 2exs, site 1.

***Epiblema foenella* (Linnaeus, 1758)**

Material examined. 3exs, site 3; 1ex, site 4; 2exs, site 5; 2exs, site 6; 4exs, site 6.

***Epinotia maculana* (Fabricius, 1775) (Fig. 11)**

Pyralis maculana Fabricius, 1775, Syst. ent.: 647.

Tortrix ophtalmicana Hübner, 1799, Samml. eur. Schmett.: pl. 9, fig. 51.

Wingspan. 21 mm. Only one specimen was collected from Heping Lin Chang.

Material examined. 1ex, site 1.

Distribution. China (new record), Japan, Russia, Europe.

Host plant. *Populus* spp. (Salicaceae) in Europe (Emmet, 1991).

***Epinotia nisella* (Clearck, 1759)**

Tinea nisella Clearck, 1759, Icons Insect. rariorum 1: pl. 12, fig. 6.

- Phalaena pavonana* Donovan 1793, Nat. Hist. Br. Insects 2: pl. 58, fig. 3.
Tortrix cuspidana Haworth, 1811, Lepid. Br.: 451.
Tortrix rhombifasciana Haworth, 1811, Lepid. Br.: 451.
Tortrix stictana Haworth, 1811, Lepid. Br. 451.
Tortrix cinerea Haworth, 1811, Lepid. Br. 451.
Tortrix siliceana Hübner, 1813, Samml. eur. Schmett. Tortrices: pl. 31, fig. 195.
Tortrix petrana Hübner, 1813, Samml. eur. Schmett. Tortrices: pl. 33, fig. 210.
Tortrix decorana Hübner, 1813, Samml. eur. Schmett. Tortrices: pl. 42, fig. 265.

Wingspan. 14.5–17.5 mm.

Material examined. 3exs, site 1; 1ex, site 3; 1ex, site 4; 1ex, site 6.

Distribution. China, Japan, Mongolia, Russia, Europe.

Host plant. *Populus* spp. (Salicaceae) in Europe (Emmet, 1991).

***Epinotia pentagonana* (Kennel, 1901) (Fig. 12)**

Epiblema pentagonana Kennel, 1901, Dt. ent. Z. Iris 13: 289.

Epinotia maculosa Kuznetsov, 1966, Trudy zool. Inst. Leningr. 37: 177, fig. 1, 2.

Wingspan. 12–13 mm. An eastern Palaearctic species.

Material examined. 2exs, site 2.

Distribution. China (new record), Korea, Japan, Russia (Ussuri).

Host plant. *Celtis* sp. (Ulmaceae) in Japan (Kawabe, 1982).

***Epinotia ramella* (Linnaeus, 1758)**

Phalaena ramella Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 540.

Pylalis paykulia Fabricius, 1787, Mantissa Insect. 2: 235.

Steganoptycha ramana Herrich-Schäffer, 1851, Syst. Bearb. Schmett. Eur. 4: 279.

Tortrix sesquilunana Haworth, 1811, Lepid. Br.: 435.

Grapholitha costana Duponchel, 1934, Hist. nat. Lépid Papillons Fr. 9: 510, pl. 263, fig. 1.

Wingspan. 13–16 mm.

Material examined. 4exs, site 1; 5exs, site 3; 2exs, site 4.

Distribution. China, Japan, Russia, Europe.

Host plant. *Betula* spp. (Betulaceae) in Europe (Emmet, 1991).

***Epinotia signatana* (Douglas, 1845) (Fig. 13)**

Sericoris signatana Douglas, 1845, Zoologist 3: 844.

Grapholitha padana Lienig & Zeller, 1846, Isis, Leipzig.

Grapholtha kroesmanniana Heinemann, 1863, Schmett. Deutsch. Schweiz, 2: 147.

Wingspan. 17 mm. This species is similar to *E. ulmi* Kuznetsov in the superficial appearance, but can be distinguished from the latter by the narrower forewing.

Material examined. 1ex, site 4.

Distribution. China (new record), Japan, Myanmar, Russia, Europe.

Host plants. *Prunus* spp., *Malus sylvestris*, *Crataegus* spp. (Pomoideae) in Europe (Emmet, 1991).

***Epinotia solandriana* (Linnaeus, 1758)**

Phalaena solandriana Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 532.

Pyralis trapezana Fabricius, 1787, Mantissa Ins. 2: 228.

Phalaena semimaculana Hübner, 1817, Samml. eur. Schmett.: pl. 40, fig. 254.

Tortrix parmatana Hübner, 1817, Samml. eur. Schmett.: pl. 40, fig. 254.

Wingspan. 19–23 mm.

Material examined. 3exs, site 1; 2exs, site 2; 10exs, site 3; 2exs, site 4.

Distribution. China, Japan, Russia, Europe.

Host plants. *Betula* spp. *Corylus* spp. (Betulaceae), *Salix caprea* (Salicaceae), and *Rosa* spp. (Rosaceae) in Europe (Emmet, 1991).

***Epinotia tenerana* [(Denis & Schiffermüller), 1775]**

Tortrix tenerana [Denis & Schiffermüller], 1775, Ank. syst. Werkes Schmett. Wien.: 129.

Epinotia tenerana ussurica Kuznetsov, 1968, Ent. Obozr. 47: 572, figs 6, 7.

Wingspan. 15 mm.

Material examined. 1ex, site 1.

Distribution. China, Japan, Russia (Ussuri), Europe.

Host plants. *Corylus* spp., *Alnus glutinosa* (Betulaceae) in Europe (Emmet, 1991).

***Epinotia ulmi* Kuznetsov, 1966 (Fig. 14)**

Epinotia ulmi Kuznetsov, 1966, Trudy zool. Inst. Leningr. 7: 182, figs 5, 6.

Wingspan. 14 mm. Referred to Bae (1997) for the genitalia.

Material examined. 1ex, site 1; 1ex, site 6.

Distribution. China (new record), Korea, Japan, Russia (Ussuri).

Host plants. *Ulmus davidiana* Planchon var. *Japonica* (Rehd.) Nakai and *Ulmus laciniata* (Trautv.) (Ulmaceae) in Japan (Kawabe, 1982).

***Epinotia ustulana* (Hübner, 1813)**

Material examined. 6exs, site 1; 1ex, site 3; 1ex, site 4.

***Epinotia* sp.**

Wingspan. 14 mm. This species were not identified yet.

Material examined. 1ex, site 6.

***Eucoenogenes teliferana* (Christoph, 1881)**

Material examined. 1ex, site 1.

***Eucosma abacana* (Erschoff, 1877)**

Grapholitha abacana Erschoff, 1877, Horae Soc. ent. Ross. 12: 342.

Wingspan. 14.5 mm.

Material examined. 2exs, site 5.

Distribution. China, Japan, Mongolia, Russia (Siberia, Sakhalin).

***Eucosma campoliliana* ([Denis & Schiffermüller], 1775)**

Material examined. 1ex, site 1; 3exs, site 4; 1ex, site 6; 2exs, site 6.

***Eucosma catharaspis* (Meyrick, 1922)**

Material examined. 1ex, site 6.

***Eucosma obumbratana* (Zeller, 1846)**

Grapholitha obumbratana Zeller, 1846, Isis, Leizig 1846: 240.

Grapholitha westwoodiana Doubleday, 1850, Synon. List. Br. Lepid.: 26.

Semasia ibiceana Herich-Schäffer, 1851, Syst. Bearb. Schmett. Eur. 4: 249.

Semasia laharpana de La Harpe, 1858, Neue Denkschr. allgem. Schweiz. Ges. Naturw 6: 97.

Wingspan. 13.5–15 mm.

Material examined. 4exs, site 1; 1ex, site 6; 2exs, site 6.

Distribution. China, Japan, Russia, Europe.

Host plant. *Sonchus arvensis* (Liguliflorae) in Europe (Emmet, 1991).

***Eucosma striatiradix* Kuznetsov, 1964**

Material examined. 1ex, site 6; 2exs, site 6.

***Eucosma* sp.**

Wingspan. 13 mm.

Material examined. 1ex, site 6.

***Gibberifera simplana* (Fischer von Röslerstam, 1836)**

Material examined. 5exs, site 1; 2exs, site 6.

***Notocelia rosaecolana* (Doubleday, 1850)**

Material examined. 1ex, site 3; 1ex, site 6; 1ex, site 6.

***Rhopobota unipunctana* (Haworth, 1811)**

Material examined. 7exs, site 1; 3exs, site 3; 1ex, site 6.

***Rhyacionia dativa* Heinrich, 1928**

Material examined. 2exs, site 4.

***Spilonota ocellana* ([Denis et Schiffermüller], 1775)**

Material examined. 2exs, site 3; 3exs, site 6.

***Spilonota semirufana* (Christoph, 1881)**

Material examined. 1ex, site 4.

***Zeiraphera argutana* (Christoph, 1881)**

Aspis argutana Christoph, 1881, Bull. Soc. Nat. Moscou 56(1): 79.

Wingspan. 18.5–21 mm.

Material examined. 2exs, site 1; 1ex, site 3.

Distribution. China, Japan, Russia.

***Zeiraphera bicolora* Kawabe, 1976 (Fig. 15)**

Zeiraphera bicolora Kawabe, 1976, Tinea 10: 42, figs 3, 15, 24.

Wingspan. 15 mm.

Material examined. 1ex, site 3.

Distribution. China (new record), Japan, Russia.

***Zeiraphera corpulentana* (Kennel, 1901)**

Semasia corpulentana Kennel, 1901, Dt. ent. Z. Iris 13: 262.

Wingspan. 16 mm.

Material examined. 3exs, site 6.

Distribution. China, Korea, Japan, Russia (Ussuri).

***Zeiraphera demutana* (Walsingham, 1900)**

Material examined. 4exs, site 1; 1ex, site 2; 5exs, site 3; 1ex, site 5; 6exs, site 6; 19exs, site 6.

***Zeiraphera griseana* (Hübner, 1799)**

Material examined. 2exs, site 3.

***Zeiraphera rufimitrana* (Herrich-Schäffer, 1847)**

Material examined. 27exs, site 3.

***Zeiraphera subcorticana* (Snellen, 1883)**

Grapholitha subcorticana Snellen, 1883, Tijdschr. Ent. 26: 215, pl. 13: 2.

Wingspan. 13–16 mm. This species is easily distinguished from other species by the paler forewing marking.

Material examined. 5exs, site 1; 1ex, site 3; 1ex, site 6.

Distribution. China, Japan, Russia.

***Zeiraphera virinea* Falkovitsh, 1965**

Material examined. 11exs, site 1; 3exs, site 3; 1ex, site 6; 2exs, site 6.

Tribe Grapholitini

The tribe Grapholitini is considered here to be polyphyletic comprising artificial assemblage of about 50 genera and 600 species, which have been characterized by hindwing venation, M_2 parallel to M_3 , and reduced male genitalia involving losses of uncus and socii (Horak and Brown, 1991).

***Dichrorampha cancellatana* Kennel, 1901**

Material examined. 1ex, site 6.

***Dichrorampha* sp.**

Wingspan. 12–13.5 mm.

Material examined. 1ex, site 5; 1ex, site 6; 2exs, site 6.

Distribution. China.

***Fulcrifera orientis* (Kuznetsov, 1966)**

Material examined. 1ex, site 5.

***Leguminivora glycinivorella* (Matsumura, 1900)**

Material examined. 1ex, site 6; 1ex, site 6.

***Matsumuraeses phaseoli* (Matsumura, 1900)**

Material examined. 2exs, site 6.

***Parapammene selectana* (Christoph, 1960)**

Grapholitha selectana Christoph, 1960, Bull. Soc. Nat. Moscou 56(2): 426.

Wingspan. 10.5–12.5 mm. This species is similar to Japanese species, *P. glaucana* (Kennel), but differs from the latter by the paler forewing marking.

Material examined. 2exs, site 1; 1ex, site 4.

Distribution. China, Japan and Russia (Primorye).

Host plant. *Tilia* spp. (Tiliaceae) in Russia (Danilevsky & Kuznetsov, 1968).

ACKNOWLEDGMENTS

We wish to express our hearty thanks to Professor L.S. Lu, Horticulture and Forest Department, Yanbian University in China and Mr. L.G. Piao, Director of the Changbai-shan National Museum of Natural History in China, for their generous help and courtesies extended to us during our expeditions. Our cordial thanks are due to Mrs J.S. Lee, H.B. Han, G.W. Lee (CIS), and Dr. J.K. Park, Sangju National University, for their assistance in collecting the materials. This work was supported in part by a grant from the KRIBB in the year 2000.

REFERENCES

- Bae, Y.S. and Y. Sakamaki. 1995. New larval food plant records of Tortricidae and Carposinidae (Lepidoptera) from Japan. *Tyô to Ga* 45: 263–268.
- Bae, Y.S. 1997. Systematic study of the genus *Epinotia* Hübner (Lepidoptera, Tortricidae) from Korea. *Ins. Koreana* 14: 1–28.
- Bradley, J.D., W.G. Tremewan, and A. Smith. 1979. *The British Tortricoid Moths*, Tortricidae: Olethreutinae. 1–320, pls 1–43. The Ray Society. London.
- Byun, B.K., Y.S., Bae and K.T. Park. 1998. In Park, K.T. (ed.), *Insects of Korea 2: Illustrated Catalogue of Tortricidae in Korea* (Lepidoptera). pp. 317. KRIBB & CIS.
- Danilevsky, A.S. and V.I. Kuznetsov. 1968. Tortricidae, Tribe Laspeyresiini, *Fauna USSR* (Insecta–Lepidoptera) 5(1): 1–633. Leningrad. [in Russian]
- Emmet, A.M. 1991. Chart showing the life history and habits of the British Lepidoptera. In A.M. Emmet (ed.), *The Moths and Butterflies of Great Britain and Ireland* 7(2): 61–301.
- Hannemann, H.J. 1961. Kleinschmetterlinge oder Microlepidoptera I. Die Wickler (s.str.) (Tortricidae) (48 Teil). In F. Dahl (ed.), *Tier. Deut.* 48: 1–233. 22 pls.
- Horak, M. and R. Brown. 1991. *Taxonomy and Phylogeny*. In van der Geest, L.P.S. and H.H. Evenhuis (eds), *Tortricid pests, their biology, natural enemies and control*: 23–48. World crop pests 5. xviii+808pp. Amsterdam.
- Jaros, J., K. Spitzer, J. Havelka and K.T. Park. 1992. Synecological and biogeographical outlines of Lepidoptera communities in North Korea. *Ins. Koreana* 9: 78–114.
- Kawabe, A. 1982. Tortricidae and Cochylidae. In Inoue *et al.*, *The Moths of Japan* 1: 62–158, 2: 158–183, pls 14–31, 227, 279–295, Kodonasha, Tokyo.
- Komai, F. 1999. A taxonomic review of the genus *Grapholitha* and allied genera (Lepidoptera: Tortricidae) in

- the Palaearctic region. *Ent. Scand. Suppl.* 55: 1-226.
- Kuznetsov, V.I. 1973. Leaf-rollers (Lepidoptera, Tortricidae) of the Southern part of the Soviet Far East and their seasonal cycles. *Ent. Obozr.* 56: 44-161.
- Kuznetsov, V.I. 1978. Tortricidae (Olethreutidae, Cochylidae). In Medvedev, G.S. (ed.), *Keys to the Insecta Fauna of the European Part of USSR*. 4(1). Opredeleteli po Faune SSSR, (117): 193-686. [in Russian] [Translated for United States Department of Agriculture and National Science Foundation (1987), Amerind Publication co. New Delhi, 991 pp.]
- Liu, Y.Q. and J.W. Bai. 1977. Lepidoptera, Tortricidae, part 1. *Economic Entomology of China* 11: ix+93, 24 pls. Beijing. [in Chinese]
- Oku, T. 1981. Notes on *Simaethis sapporensis* Matsumura with description of a new genus of Olethreutinae, Tortricidae. *Tyô to Ga* 31: 126-132.
- Razowski, J. 1983. Motyle (Lepidoptera) Polski, VI. Olethreutinae: Olethreutidii. *Monogr. Fauny Polski*. 13: 1-177, pls 1-11.
- Razowski, J. 1987. Motyle (Lepidoptera) Polski. Czesc VII. Uzupełnienia i Eucosmini. *Monogr. Fauny Polski*. 19: 1-253, pls 1-10.
- Razowski, J. 1991. Motyle (Lepidoptera) Polski, VIII. Grapholitini. *Monogr. Fauny Polski*. 19: 1-187, pls 1-10.

(Received: October 2, 2000)

(Accepted: November 20, 2000)